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Title:
Does ICT-based multi-source learning improve pupil enjoyment and attainment in Geography?
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Research topic:
Technology-integrated pedagogical strategies; secondary geography teaching and learning.
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England – Eastern region
Educational sector of participants:
Secondary
Abstract:
The purpose of this study was to consider the effective use of the Internet in the teaching and learning of geography at secondary school level. Pupil attainment, motivation and enjoyment were examined by comparing an 'Internet/multi-source' group with an equivalent ability 'control' group taught using 'traditional' methods. The classes involved were in Year 8, studying rivers and flooding. Evidence was collected using questionnaires, exam/project results and the teacher's perceptions.
Findings:
The main findings were that the 'Internet' group was well motivated towards geography and was capable of producing some excellent project work showing high ICT skills. The 'control' group was also capable of producing a high standard of work, although not to the same standard as the 'Internet' group. However, the attainment of both 'Internet' groups in exams and tests was significantly lower than that of the 'Control' groups.
Participants' information:

Two Year 8 groups (Internet and Control)

Equipment used:

Internet group – this group was taught without the use of text books. Most work was done solely with the Internet, although CDs were used to focus certain aspects of the work.

Control group – this group was taught using 'traditional' methods. This did not mean just text books, but also videos, Internet, Resource Centre (library), etc.

Applied method of analysis:

The two sets being studied were of similar ability. They were both mid-ability, with a small degree of mixed ability, both at the upper and lower levels. Evidence regarding pupil's attainment was collected from test and exam results. Both sets took the same tests, to simplify comparison. Motivation and enjoyment were measured in two ways. Firstly, pupils from both sets completed questionnaires that asked questions on their feelings/thoughts about the work. Secondly, teacher perception was used, with notes on how well pupils worked, their motivation during lessons, etc. kept in a research diary.

Conclusion/discussion:

The overall enjoyment and motivation of the 'Internet' group was slightly higher than that of the control group. However, the attainment of the 'Internet' group was well below the 'Control'.

Enjoyment and motivation – On the whole the same amount of pupils found "Geography lessons interesting" (Internet group = 44%, Control group = 47%), although the Internet group generally thought they "Explored new ideas" (55% compared to 47%) more often than the Control and thought they produced a "Good quality of work" (57% compared to 45%). Figures for other questions, such as how well children work in geography, were very similar, with only one or two percent difference. When questions started to focus on the use of computers, the Internet group not surprisingly were a lot more enthusiastic and proficient. A total of 93% found the use of computers "interesting", compared to 56% with the Control group, who thought computers more of a "treat" than the Internet group (75% compared to just 15%). The Internet group clearly regarded the computers as their main learning tool, rather than something used simply for project/research work, as the Control group did.

Attainment – In the main Year 8 exam, the results are very different. The average mark for the Internet group was 47%, whereas the average for the Control group was 62%. This is a huge disparity considering the groups were of similar ability (other exam results support this). Even though the Internet group achieved lower exam results, they still believed they were doing well; 85% thought they "learnt a lot in geography" and all but 1 out of the 27 pupils disagreed that computers had "stopped them learning geography".

However, project work (marked to National Curriculum Levels) should also be considered when assessing the attainment of the two groups. Two such projects were conducted during the study. The first (on volcanoes) was done in the term prior to the main study and showed the Internet group average grade as 3.7, but the Control average as 4.2. The second project (on the Amazon) was done well into the second term (the main research period) and shows that the Internet group raised their average to 4.6 and the Control group rising to 4.3. This would suggest that the Internet group (once familiarising themselves to the computers could gain more from the use of the Internet when researching and presenting work for a pupil-centred project).

Recommendations:

The overall conclusion of this study is that traditional teaching methods (text book and teacher) are more effective for helping students understand the theory work, whereas the Internet can enhance the attainment and motivation of pupils when conducting project work.

The positive aspects of using the Internet as a teaching and learning tool are:

- The potential range of information available to the pupils. This often stimulates and raises the levels of motivation.
- The quality of project work is greatly improved with the use of computers. Once children have appreciated the importance of reading through and analysing work downloaded from the Internet, the work they produce can be very detailed. (Teachers do need to be careful not to accept work that is simply taken directly from Internet sources).

The main problems arising from teaching pupils entirely using the Internet are:

- The difficulty in finding suitable websites/information when trying to teach theory. Most information is written by University researchers and is subsequently targeted far too high for 12-13 year olds.

- The problems of getting pupils to read what is in front of them on the computer screen. When filling in an 'Interactive worksheet' pupils are tempted just to 'cut and paste' from the website.
- The lengthy preparation time – it takes a long time to find suitable websites for the children to use. If lessons are not prepared properly, pupils are likely to waste entire lessons ploughing through search engines trying to find a useful site. It is also necessary to produce very clear 'Lesson sheets', which guide children through the lesson with a list of tasks they need to do. These sheets can be put onto the school's 'shared' drive to reduce photocopying.
- Logistics – with an Internet class of 27 and a room with 16 computers, pupils have to do most of their work in pairs. This inevitably results in one person doing most of the work and the other sharing the credit. Also block booking a computer suite can be difficult and annoy other staff.
- Homework – setting homework is difficult. Some children have computers at home, some do not. If worksheets are set, where are they stored after being handed in? In this study, each child had a folder to put such sheets in, but this started to go against the purpose of the study.
- Revision – since all their work is done on the computers at school, they have nothing to revise from when preparing for tests and exams. To overcome this a lot of teacher time was spent preparing worksheets and information sheets for revision.
- Room layout – the Internet group were taught in a room where all the pupils faced the wall. This does not aid talking to the whole class and therefore pupils' concentration and attention is sometimes lacking.

Research evaluation:

The main benefit of this research for my own teaching is the increased awareness I now have concerning ICT potential in geography lessons. I include the use of the Internet – and other ICT resources – in all the classes that I teach, however, this study has enabled me to bring in new methods of teaching/learning. For instance; the children in the Internet group have produced Power Point presentations to show weathering around the school, they have produced a fieldwork write-up for the department's web page and they produced a 'Disaster newspaper' using Publisher. The quality of pupil-centred project work, a key part of the geography Key Stage 3 scheme of work, has greatly improved with the use of the Internet and 'computer competent' pupils.

I am pleased to see, however, that there are clearly huge benefits in traditional teaching. Through test and exam results the two groups have proved that the most important resource is still the teacher ! It is, therefore, evident that successful geography teaching and learning should incorporate both 'traditional' methods and ICT-based activities. This has been a characteristic of geography teaching at Soham Village College over recent years. However, teachers should be prepared to experiment with different activities, since many of them will prove to be not only successful, but also enjoyable for the pupils involved.